

WHAT IS CLAIMED IS:

1. An integrated circuit arrangement, comprising:
a set of contact pads arranged in a pattern;
a multi-layer conductive structure which electrically
5 connects the set of contact pads to at least one signal
line, wherein the conductive structure provides impedance
matching between the pads and the at least one signal line.
2. The arrangement as recited in claim 1, wherein the set
10 of contacts includes a row of spaced apart pads having a
first pitch.
3. The arrangement as recited in claim 2, wherein the
signal line includes at least two signal lines spaced apart
15 having a second pitch, wherein the conductive structure
provides a smooth impedance transition between the signal
lines and the pads.
4. The arrangement as recited in claim 3, wherein the
20 first pitch and the second pitch are standard pitches and

the transition of the conductive structure enables operating frequencies 50% or more over standard via connections.

5 5. The arrangement as recited in claim 1, wherein the conductive structure includes two vias each contact pad.

6. The arrangement as recited in claim 1, wherein the conductive structure includes a conductor disposed in a parallel orientation to a top surface of the pads, and a
10 via connecting the conductor to the signal line.

7. The arrangement as recited in claim 1, wherein the contact pads include a centrally disposed pad and two pads
15 adjacent to the centrally disposed pad, wherein the two pads connect to the conductive structure each by a conductor disposed in a parallel orientation to a top surface of the two pads, and vias connecting each conductor to signal lines, wherein each conductor brings a connection
20 point to a corresponding via closer to the centrally

disposed pad.

8. The arrangement as recited in claim 7, wherein the pads are in a row and the conductors are oriented in the
5 row.

9. The arrangement as recited in claim 7, wherein the centrally disposed pad includes a conductor, and the pads are in a row and the conductors and their corresponding
10 vias are offset from a line in the row.

10. The arrangement as recited in claim 1, wherein the conductive structure is multi-tiered and includes conductors disposed in a parallel orientation to a top
15 surface of the pads, and vias connecting the conductors to the signal line and the pads.

11. The arrangement as recited in claim 10, wherein the multi-tiered conductive structure includes a pyramidal
20 shape having its base at the pads.

12. The arrangement as recited in claim 10, wherein the multi-tiered conductive structure includes a plurality of vias at each connection point between conductors and/or pads wherein adjacent vias at a same tier are oriented one behind the other in a parallel direction with respect to the at least one signal line.

13. An integrated circuit arrangement, comprising:
a set of contact pads arranged in a pattern;
a multi-layered conductive structure which electrically connects the set of contact pads to at least one signal line, wherein the conductive structure includes vertically disposed vias and horizontally disposed conductors arranged to provide impedance matching between the pads and the at least one signal line.

14. The arrangement as recited in claim 13, wherein the set of contact pads includes a row of spaced apart pads having a first pitch.

15. The arrangement as recited in claim 14, wherein the signal line includes at least two signal lines spaced apart having a second pitch, wherein the conductive structure provides a smooth impedance transition between the signal lines and the pads.

16. The arrangement as recited in claim 15, wherein the first pitch and the second pitch are standard pitches and the transition of the conductive structure enables operating frequencies 50% or more over standard via connections.

17. The arrangement as recited in claim 13, wherein the conductive structure includes two vias connecting to each contact pad.

18. The arrangement as recited in claim 13, wherein the conductive structure includes the conductors disposed in a parallel orientation to a top surface of the pads.

19. The arrangement as recited in claim 13, wherein the contact pads include a centrally disposed pad and two pads adjacent to the centrally disposed pad, wherein the two
5 pads connect to the conductive structure each by a conductor disposed in a parallel orientation to a top surface of the two pads, and vias connecting each conductor to signal lines, wherein each conductor brings a connection point to a corresponding via closer to the centrally
10 disposed pad.

20. The arrangement as recited in claim 19, wherein the pads are in a row and the conductors are oriented in the row.

21. The arrangement as recited in claim 19, wherein the centrally disposed pad includes a conductor, and the pads are in a row and the conductors and their corresponding vias are offset from a line in the row.

22. The arrangement as recited in claim 13, wherein the
conductive structure is multi-tiered and includes
conductors disposed in a parallel orientation to a top
surface of the pads, and vias connecting the conductors to
5 the signal line and the pads.

23. The arrangement as recited in claim 22, wherein the
multi-tiered conductive structure includes a pyramidal
shape having its base at the pads.

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24. The arrangement as recited in claim 22, wherein the
multi-tiered conductive structure includes a plurality of
vias at each connection point between conductors and/or
pads wherein adjacent vias at a same tier are oriented one
15 behind the other in a parallel direction with respect to
the at least one signal line.

25. An integrated circuit package, comprising:
a set of dielectric layers having a top surface;
20 a top contact array on the top surface;

a conductive structure extending between the top contact array and a set of output contacts,

wherein a signal travels on a path from the top contact array to the set of output contacts, and an
5 impedance is balanced on the path of the signal in accordance with the conductive structure.

26. The package as recited in claim 25, wherein the set of output contacts are disposed in a row a first spacing
10 pitch.

27. The package as recited in claim 26, wherein the contact array includes a second spacing pitch, wherein the conductive structure provides a smooth impedance transition
15 between the contact array and the output contacts.

28. The package as recited in claim 27, wherein the first pitch and the second pitch are standard pitches and the transition of the conductive structure enables operating
20 frequencies 50% or more over standard via connections.

29. The package as recited in claim 25, wherein the contact array includes a centrally disposed pad and two pads adjacent to the centrally disposed pad, wherein the two pads connect to the conductive structure each by a conductor disposed in a parallel orientation to a top surface of the two pads, and vias connecting each conductor to output contacts, wherein each conductor brings a connection point to a corresponding via closer to the centrally disposed pad.

30. The package as recited in claim 29, wherein the centrally disposed pad includes a conductor, and the pads are in a row and the conductors and their corresponding vias are offset from a line in the row.

31. The package as recited in claim 25, wherein the conductive structure is multi-tiered and includes conductors and vias connecting the conductors to the output contacts and the contact array.

32. The package as recited in claim 31, wherein the multi-tiered conductive structure includes a pyramidal shape having its base at the pads.

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33. The package as recited in claim 31, wherein the multi-tiered conductive structure includes a plurality of vias at each connection point between conductors, output contacts and/or the contact array wherein adjacent vias at a same tier are oriented one behind the other in a parallel direction with respect to the at least one signal line.

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